

Application No.09/341,339
Filed: August 30, 1999
TC Art Unit: 3723
Confirmation No.: 5010

REMARKS

In the most recent Office Action, claims 1 and 4-17 were pending. Claims 5-6, 8, 11-14 and 16 are withdrawn from consideration. Claims 1, 4, 9-10 and 17 are rejected. Claims 7 and 15 are objected to.

In response, claims 1, 4-6, 8, 10-14 and 16 are canceled from the application without prejudice. Claims 7, 9 and 17 are amended. Accordingly, claims 7, 9, 15 and 17 are pending in the present application. No new matter is added.

Applicant thanks the Examiner for thorough search and consideration of the invention recited in the claims of the present application and responds to the comments in the Office Action as follows.

Election/Restriction

The Office Action states that claims 5-6, 8, 11-14 and 16 are drawn to a non-elected invention and should be cancelled in response to the present final rejection. Applicant has cancelled claims 5-6, 8, 11-14 and 16 from the present application without prejudice. Entry is respectfully requested.

Specification

The Office Action states that the amendment filed February 17, 2005 is objected to for introducing new matter. In particular, the Office Action states that the amendments limiting the disclosure to a particular embodiment is objected to.

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While not acceding to the correctness or propriety of the objection to the specification, Applicant has amended the application to cancel the subject matter identified by the Office Action. Entry is respectfully requested.

The Office Action also objects to the specification for terminology different from that generally accepted in the art as causing undue ambiguities. Applicant has amended the specification to clarify the terminology identified by the Office Action. Entry is respectfully requested.

The office action states that the terminology "free ring mechanism" is different from that generally accepted in the art. Applicant respectfully believes that the terminology is clear, especially in the context of the specification, page 11, line 3 - page 12, line 5, claim 7 and Figures 1 and 2. The relative location, operation and purpose of the free ring mechanism are specifically shown and described with a reasonable degree of certainty to inform the ordinary artisan.

In view of the above amendments, Applicant respectfully believes that the objection to the specification is overcome and respectfully requests that it be reconsidered and withdrawn.

Claim Rejections - 35 U.S.C. §112

The Office Action states that claim 17 is rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Office Action states that claim 17 has improper dependency and is thus indefinite.

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In response, Applicant has amended claim 17 to correct the dependency and overcome the rejection. In view of the amendment to claim 17, Applicant respectfully submits that the rejection under 35 U.S.C. §112, second paragraph, is overcome and respectfully requests that it be reconsidered and withdrawn.

Claim Rejections - 35 U.S.C. §103

The Office Action states that claims 1, 4, 10 and 17 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Applicant's admitted prior art (AAPA). In particular, the Office Action states that AAPA meets all of the claim limitations or that the claim limitations are obvious variations of AAPA. Claim 1, 4 and 10 are cancelled from the application without prejudice, thereby rendering their rejection under 35 U.S.C. §102(b) or §103(a) as moot.

Claim 17 is amended to recite an apparatus that includes the subject matter of cancelled claim 4, as well as the limitations of claim 17 as originally presented. Applicant respectfully submits that claim 17 includes a number of limitations that are not taught or suggested in AAPA. Accordingly, Applicant respectfully believes that the rejection of claim 17 under 35 U.S.C. §102(b) or §103(a), is overcome, and respectfully requests that it be reconsidered and withdrawn.

The Office Action states that claim 9 is rejected under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Hyatt (US Patent No. 5,877,252). In particular, the Office Action states that AAPA teaches all of the claim limitations or obvious variations, with the exception of a

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pressure tube in a hollow portion of the tool, which is taught by Hyatt in an obvious combination. Applicant respectfully traverses the rejection.

Claim 9 is rewritten to include all the subject matter of now cancelled claim 4, as well as a limitation from claim 17. Accordingly, claim 9 recites an apparatus for polishing an inner surface of an aluminum extrusion with a length ten or more times greater than a diameter by integrating elusion by electrolyte and abrasion by a grindstone attached to a tool electrode with the apparatus oriented in a vertical direction and a hollow portion inside the tool electrode with a pressure tube that can be pressurized. Applicant submits that claim 9 now recites a number of limitations that are not taught or suggested in AAPA or the disclosure by Hyatt, either alone or in combination.

As discussed in AAPA, it is difficult to apply finishing and polishing techniques used for steel or stainless steel to polish an internal cylindrical surface of an aluminum workpiece. As noted in the Office Action, it is difficult to obtain the desired precision due to a number of factors including the low pressure used to work aluminum owing to its softness and ease of deformation. Techniques for polishing internal surfaces of steel and stainless steel workpieces rely in part on the greater strength and rigidity of the materials to overcome some of the drawbacks inherent in the horizontally oriented boring devices. In addition, finishing and polishing of internal surfaces of steel and stainless steel tubes is typically enhanced by the ability of the workpiece to be rotated while the boring tool is rotated and reciprocated within the boring cavity. These advantages or compensation techniques are not available for aluminum workpieces

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with long bore holes that are not easily rotated, due to the softness of the material and dimensions of the workpieces involved.

Indeed, the disclosure by Hyatt highlights some of the difficulties in honing bore holes using conventional horizontally oriented honing devices. For example, Hyatt indicates that the workpiece or tool may be moved relative to the other (column 6, line 41 - 44). The elimination of eccentricities in the operation of the tool equipped with a supply tube is brought about by having the tube and tool share a center longitudinal axis of rotation or arranged to be symmetrical to preserve balance during high speed rotation to avoid vibration during use (Column 7, lines 32 - 51).

In addition, the disclosure by Hyatt focuses only on ferrous materials, as noted by the material temperatures, discoloration and temper or heat treatments available for the materials (Column 2, lines 48 - 57). Indeed, the disclosure by Hyatt mentions only one material for workpiece composition in a honing operation, that of gray cast iron (Column 13, lines 21-23). Hyatt also calls for high speed, high pressure operations that are suitable for ferrous materials and not for aluminum based workpieces.

Accordingly, even if one of ordinary skill in the art were to obtain a suggestion or motivation from the disclosure by Hyatt to include a pressure tube in an internal surface polishing apparatus, they would still have to engage a great deal of further experimentation to overcome the challenges and difficulties in machining aluminum workpieces rather than ferrous material based workpieces. Furthermore, one of ordinary skill in the art will receive no teaching, suggestion or motivation to combine the teachings of Hyatt of that with AAPA to arrive at the invention

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recited in claim 9 of the present invention, because Hyatt fails to deal with any of the aspects involved in machining aluminum rather than ferrous based materials.

Applicant respectfully submits that it would not be obvious to provide a horizontal honing or polishing machine in a vertical orientation to reduce a device foot print, as the length, size and weight of such devices tends to dictate their layout in a horizontal arrangement. Indeed, the arrangement of a honing device in a vertical direction implies a more difficult setup to stabilize the device, more difficult access to the device owing the increased elevation of important components that indicate the need for a maintenance person to work off of a ladder or other equipment that permits close access to elevated devices and the departure from industry standard arrangements that would implicate specific and thus costly device components. Furthermore, the polishing apparatus according to the present invention is operable with workpieces that are long in comparison to their bore hole diameter indicating that the polishing apparatus further extends the length of the apparatus to permit insertion and removal of the elongated workpieces and arguing against a vertical orientation.

For all the above reasons, Applicant respectfully submits that it would not be obvious to modify the AAPA to provide a vertical setup as is stated in the Office Action. Indeed, taking the prior art references relating to internal finishing or polishing of steel or stainless steel workpieces, one of ordinary skill in the art would be motivated to obtain a horizontal arrangement solution for machining aluminum workpieces, rather than changing the orientation of the entire polishing apparatus. This point of view is stated in AAPA where the inventors attempted

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to meet the challenges of horizontally machining aluminum, which has a lower strength and rigidity and greater softness than the traditional materials of steel or stainless steel, which have a strength and rigidity sufficient for the prior art techniques.

In view of the above amendments and discussion with respect to claim 9, Applicant respectfully submits that the rejection of claim 9 under 35 U.S. C. §102(b) or 35 U.S. C. §103(a) in view of Hyatt is overcome, and respectfully requests that it be reconsidered and withdrawn.

Allowable Subject Matter

The Office Action states that claim 7 and 15 are objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. Applicant has accordingly rewritten claims 7 and 15 to make them allowable as stated in the Office Action and respectfully requests notice of their allowance.

Conclusion

The present amendment made under 35 U.S. C. §1.116(b) is believed to place the application in condition for allowance, or in better form for appeal. Applicant respectfully submits that the present response raises no new issues that would require any further search or consideration on the part of the Examiner and respectfully requests that the response be entered as narrowing the issues under consideration. Applicant has cancelled a number

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of claims in the application to provide a smaller number of claims for consideration by the Examiner in accordance with 35 U.S. C. §1.116(b).

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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